PATENT

CLAIMS

Please amend claims 1, 21 and 41 as shown below. Please cancel claims 8 and 42.
Please add claims 47-58.

1.   (Currently Amended)   A method for processing data for transmission over
multiple transmission channels in a multi-channel communication system, comprising:

determining characteristics of a plurality of transmission channels available for data
transmission;

segregating the plurality of transmission channels into one or more groups of
transmission channels; and

for each group of transmission channels,

selecting one or more available transmission channels in the group based on the
determined characteristics and a threshold, and

coding and modulating data for all selected transmission channels in the group
based on a particular common coding and modulation scheme selected for the group to
provide modulation symbols.

2.   (Original) The method of claim 1, further comprising:

for each group of transmission channels

weighting modulation symbols for each selected transmission channel in the
group based on a respective weight indicative of a transmit power level for the selected
transmission channel and derived based in part on the determined characteristics of the
selected transmission channel.

3.   (Original) The method of claim 1, wherein the multi-channel communication
system is an orthogonal frequency division modulation (OFDM) system, and wherein the
plurality of available transmission channels correspond to a plurality of frequency subchannels.

4.   (Original) The method of claim 1, wherein the multi-channel communication
system is a multiple-input multiple-output (MIMO) communication system, and wherein the

plurality of available transmission channels correspond to a plurality of spatial subchannels of a MIMO channel.

5.   (Original) The method of claim 4, wherein the MIMO communication system utilizes OFDM, and wherein the plurality of available transmission channels correspond to a plurality of spatial subchannels of a plurality of frequency subchannels.

6.   (Original) The method of claim 5, wherein each group corresponds to a respective transmit antenna, and wherein the plurality of transmission channels in each group correspond to a plurality of frequency subchannels for the corresponding transmit antenna.

7.   (Original) The method of claim 1, wherein each group is associated with a respective threshold used to select the available transmission channels in the group for use.

8.   (Cancelled)

9.   (Original) The method of claim 2, wherein the weights for the selected transmission channels in each group are derived to distribute total transmit power available for the group among all selected transmission channels in the group to achieve similar received signal quality.

10.   (Original) The method of claim 9, wherein the received signal quality is estimated by a signal-to-noise-plus-interference ratio (SNR).

11.   (Original) The method of claim 1, wherein the determined characteristics for the available transmission channels are channel gains.

12.   (Original) The method of claim 11, wherein, for each group, transmission channels having power gains greater than or equal to a particular power gain threshold are selected, and wherein the power gains are determined based on the channel gains.

13.   (Original) The method of claim 1, wherein the determined characteristics for the available transmission channels are received signal-to-noise-plus-interference ratios (SNRs).

14.   (Original)   The method of claim 13, wherein, for each group, transmission channels having SNRs greater than or equal to a particular SNR threshold are selected.

15.   (Original)   The method of claim 2, wherein the weight for each selected transmission channel is further derived based on total transmit power available for the group in which the transmission channel belongs.

16.   (Original)   The method of claim 2, wherein the weight for each selected transmission channel is further derived based on a normalization factor, which is determined based on the characteristics of the selected transmission channels.

17.   (Original)   The method of claim 1, wherein the threshold for each group is selected to provide high throughput for the selected transmission channels in the group.

18.   (Original)   The method of claim 1, wherein the threshold for each group is selected to provide a highest possible throughput for the available transmission channels in the group.

19.   (Original) The method of claim 1, wherein the threshold for each group is derived based on a particular target received SNR for all selected transmission channels in the group.

20.   (Original) The method of claim 2, further comprising:
transmitting the weighted modulation symbols on the selected transmission channels.

21.   (Currently Amended)   A method for processing data for transmission over multiple transmission channels in a multi-channel communication system, comprising:

determining characteristics of a plurality of transmission channels available for data transmission;

selecting one or more available transmission channels based on the determined characteristics and a metric;

coding data for all selected transmission channels based on a particular common coding scheme to provide coded data selected for the transmission channels that were selected; and

modulating the coded data for all selected transmission channels based on a particular modulation scheme to provide modulation symbols.

22.   (Original) The method of claim 21, further comprising:

weighting modulation symbols for each selected transmission channel based on a respective weight indicative of a transmit power level for the selected transmission channel.

23.   (Original) The method of claim 22, wherein the weights for the selected transmission channels are equal.

24.   (Original) The method of claim 22, wherein the weights for the selected transmission channels are unequal.

25.   (Original) The method of claim 22, wherein the weights for the selected transmission channels are derived based in part on the determined characteristics of the selected transmission channel.

26.   (Original) The method of claim 25, wherein the weights for the selected transmissions are further derived to distribute total available transmit power amongst all selected transmission channels to achieve similar received quality for modulation symbols transmitted via the selected transmission channels.

27.　　(Original)　The method of claim 21, wherein the metric relates to throughput and wherein the one or more transmission channels are selected based on the throughput achievable for the selected transmission channels.

28.　　(Original)　A method for transmitting data over multiple transmission channels in a multi-channel communication system, comprising:

　　determining characteristics of each of a plurality of transmission channels available for use for data transmission;

　　segregating the plurality of available transmission channels into one or more groups;

　　coding and modulating data for selected ones of the available transmission channels in each group to provide modulation symbols;

　　weighting modulation symbols for each selected transmission channel in each group based on a respective weight indicative of a transmit power level for the selected transmission channel and derived based in part on the determined characteristics of the selected transmission channel; and

　　transmitting the weighted modulation symbols on the selected transmission channels.

29.　　(Original)　The method of claim 28, wherein the multi-channel communication system is a multiple-input multiple-output (MIMO) that utilizes orthogonal frequency division modulation (OFDM).

30.　　(Original)　The method of claim 29, wherein each group corresponds to a respective transmit antenna, and wherein the plurality of transmission channels in each group correspond to a plurality of frequency subchannels for the corresponding transmit antenna.

31.　　(Original)　The method of claim 28, wherein the data for the selected transmission channels in each group is coded based on a common coding scheme.

32.　　(Original)　The method of claim 31, wherein the common coding scheme is selected from among a plurality of possible coding schemes.

33.   (Original)   The method of claim 28, wherein the modulation symbols for the selected transmission channels in each group are derived based on a common modulation scheme.

34.   (Original)   The method of claim 33, wherein the common modulation scheme is selected from among a plurality of possible modulation schemes.

35.   (Original)   The method of claim 28, wherein the data for the selected transmission channels in each group is coded and modulated based on a common coding and modulation scheme selected for the group.

36.   (Original)   The method of claim 28, further comprising:

selecting one or more of the available transmission channels in each group for use for data transmission based on the determined characteristics of the transmission channels and a threshold.

37.   (Original)   The method of claim 36, wherein each group is associated with a respective threshold.

38.   (Withdrawn)   In a multi-channel communication system, a method for determining a threshold used to select transmission channels for use for data transmission, comprising:

defining a set of code rates, wherein each code rate is selectable for coding data prior to transmission;

defining a set of setpoints, wherein each setpoint corresponds to a respective code rate and is indicative of a target signal-to-noise-plus-interference ratio (SNR) required for a particular level of performance at the corresponding code rate;

determining a particular number of transmission channels supported by each code rate and capable of achieving the setpoint corresponding to the code rate;

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determining a performance metric for each code rate based in part on the number of supported transmission channels; and

deriving the threshold based on the performance metrics for the code rates in the set, and wherein transmission channels are selected for use for data transmission based on the threshold.

39.   (Withdrawn)   The method of claim 38, wherein the number of transmission channels supported by each code rate is determined by distributing total available transmit power among the supported transmission channels such that the setpoint corresponding to the code rate is achieved for each supported transmission channel.

40.   (Withdrawn)   The method of claim 38, wherein the performance metric for each code rate is an overall throughput achievable by the supported transmission channels.

41.   (Currently Amended)   A transmitter unit in a multi-channel communication system, comprising:

a controller configured to receive channel state information (CSI) indicative of characteristics of a plurality of transmission channels available for data transmission, segregate the available transmission channels into a plurality of groups, and select one or more available transmission channels in each group for use for data transmission based on the channel characteristics and a threshold; and

a transmit data processor coupled to the controller and configured to receive, code, and modulate data for each group based on a particular common coding and modulation scheme selected for the group to provide modulation symbols, and to weight modulation symbols for each selected transmission channel based on a respective weight, wherein each weight is indicative of a transmit power level for the corresponding selected transmission channel and is derived based in part on the characteristics of the selected transmission channel.

42.   (Cancelled)

43.   (Original)   The transmitter of claim 41, wherein the controller is further configured to determine a particular threshold for each group based on the characteristics of the available transmission channels.

44.   (Original) The transmitter of claim 41, further comprising:

a transmit channel processor coupled to the transmit data processor and configured to receive and demultiplex the weighted modulation symbols for the selected transmission channels into a plurality of streams, one stream for each antenna used to transmitted the modulation symbols.

45.   (Original)   The transmitter of claim 41, wherein the CSI comprise signal-to-noise-plus-interference ratio (SNR) estimates for the available transmission channels.

46.   (Original)   The transmitter of claim 41, wherein the CSI comprise channel gain estimates for the available transmission channels.

47.   (New)   A method for processing data for transmission over multiple transmission channels in a multi-channel communication system, comprising:

determining characteristics of a plurality of frequency subchannels of an orthogonal frequency division modulation (OFDM) system;

selecting a group of frequency subchannels based on the determined characteristics and a metric; and

selecting a common modulation and coding scheme for the group of frequency subchannels.

48.   (New) The method of claim 47, further comprising:

weighting modulation symbols for each selected subchannel in the group based on a respective weight indicative of a transmit power level for the selected subchannel.

49.   (New)   The method of claim 47, wherein each group is associated with a respective metric used to select the subchannels in the group for use.

50.   (New)   An apparatus for processing data for transmission over multiple transmission channels in a multi-channel communication system, comprising:

means for determining characteristics of a plurality of frequency subchannels of an orthogonal frequency division modulation (OFDM) system;

means for selecting a group of frequency subchannels based on the determined characteristics and a metric; and

means for selecting a common modulation and coding scheme for the group of frequency subchannels.

51.   (New) The apparatus of claim 50, further comprising:

means for weighting modulation symbols for each selected subchannel in the group based on a respective weight indicative of a transmit power level for the selected subchannel.

52.   (New)   The apparatus of claim 50, wherein each group is associated with a respective metric used to select the subchannels in the group for use.

53.   (New) A method for processing data for transmission over multiple transmission channels in a multi-channel communication system, comprising:

determining characteristics of a plurality of spatial channels of a multiple-input multiple-output (MIMO) communication system;

selecting a group of spatial channels based on the determined characteristics and a metric; and

selecting a common modulation and coding scheme for the group of spatial channels.

54.   (New) The method of claim 53, further comprising:

weighting modulation symbols for each selected spatial channels in the group based on a respective weight indicative of a transmit power level for the selected spatial channels.

55.   (New)   The method of claim 53, wherein each group is associated with a respective metric used to select the spatial channels in the group for use.

56.   (New) ˙An apparatus for processing data for transmission over multiple transmission channels in a multi-channel communication system, comprising:

means for determining characteristics of a plurality of spatial channels of a multiple-input multiple-output (MIMO) communication system;

means for selecting a group of spatial channels based on the determined characteristics and a metric; and

means for selecting a common modulation and coding scheme for the group of spatial channels.

57.   (New) The apparatus of claim 56, further comprising:

means for weighting modulation symbols for each selected spatial channel in the group based on a respective weight indicative of a transmit power level for the selected spatial channel.

58.   (New) The apparatus of claim 56, wherein each group is associated with a respective threshold used to select the spatial channels in the group for use.